



NEW HAMPSHIRE  
POLLUTION PREVENTION PROGRAM

# Wastelines

Spring 2005

## Global Warming and its Projected Effect in the Northeast

Since the industrial revolution, scientists have noticed the Earth's climate and environment is rapidly changing. This is demonstrated by retreating glaciers, rising sea levels and increasing average temperatures worldwide. It is speculated that humans are significant contributors to the gases responsible for global warming. Researchers say that population growth, fossil fuel burning and deforestation contribute to global warming.

### Background: The Greenhouse Effect

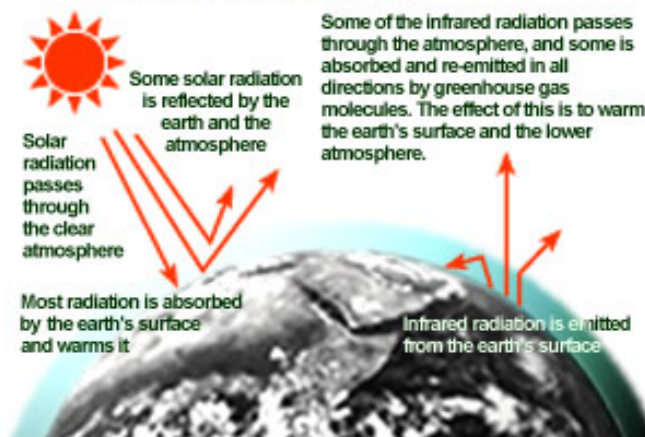
Most of the solar radiation that passes through the Earth's atmosphere is absorbed by the Earth's surface. The radiation that is not absorbed is reflected back out of the atmosphere or is trapped and refracted in all directions by the carbon dioxide and other greenhouse gas molecules. The effect warms the Earth's surface and lower atmosphere. If we did not have natural greenhouse gases (GHGs), the earth would be much cooler and uninhabitable. So what's the problem?

The most prevalent greenhouse gas is **carbon dioxide**, a natural byproduct of burning

oil, coal, and other organic materials. According to the National Academy of Sciences, the temperature of the Earth's surface has risen most remarkably since the advent of the Industrial Revolution in America, and atmospheric levels of carbon dioxide have increased by 30 percent since that time.

Water vapor, methane, nitrous oxide and ozone are other GHGs that naturally occur in the Earth's atmosphere. These gases have differing abilities to absorb solar radiation. There are also GHGs in our atmosphere that are not naturally occurring and are the result of industrial processes. The man-made gases are more heat-absorbent than some of the naturally occurring GHGs, and the eventual effect of too much GHG (in any form) in our atmosphere is a rise in the temperature of our environment.

### The Greenhouse Effect



### Changes in the Northeast

Increased global temperatures are expected to affect the world in different ways. The projected changes for the Northeast include:

- Shorter, warmer winters, resulting in less skiing, snowmobiling and other winter recreation, which will negatively impact the tourist industry.
- Rising sea levels that threaten property value and recreational areas along the coast.
- Decreased air quality, which will increase the prevalence

**Global Warming,**  
*continued on page 2*

## New Hampshire Businesses Can Reduce Carbon Dioxide Emissions

Simple energy conservation practices can reduce greenhouse gas emissions. Less electricity used equals less emissions from a coal or oil-burning power plant. Strategies to reduce emissions include energy-saving measures, such as reducing overall power consumption and high-efficiency replacement equipment. Try these energy-saving ideas.

- Replace incandescent bulbs with Energy Star-rated compact fluorescent bulbs. These energy efficient bulbs can be more expensive to purchase, but they have a longer life and operate at a lower kWh than incandescent bulbs, resulting in lower utility bills.
- Install timers or motion detectors on lights at your facility. Restrooms, break rooms, and storage closets are excellent examples of where to install these special switches.
- Insulate office and workspaces, tune up furnaces and install energy- and water-conserving devices.
- Replace older fleet vehicles with fuel-efficient models which are those rated at 32 miles per gallon or better.
- Switch from diesel fuel to cleaner burning biodiesel (a blend of diesel and oil). Burning biodiesel reduces the amount of greenhouse gas emitted into the air during combustion.
- Educate employees, especially those that make deliveries, on anti-idling strategies. Anti-idling means turning off your vehicle engine while stopped for 30 seconds or more.
- Set up a ride share program for employees that live close to each other.



### The Bottom Line: Less Emissions = \$ Saved + A Cleaner Environment

*Information for this article was taken in part by The Vermont Agency of Natural Resources' EcoLogical Solutions flyer on Global Warming.*

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The New Hampshire Pollution Prevention Program is a free, confidential, non-regulatory, technical and compliance assistance program for New Hampshire businesses, municipalities and others. The NHPPP maintains an information clearinghouse, conducts on-site pollution prevention opportunity assessments, provides pollution prevention planning assistance, and organizes conferences and workshops.



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### Global Warming, *continued from page 1*

of smog, impacting our health and vistas.

- Increased health risks associated with the increase of tick and mosquito-carried diseases.
- Reduced natural resources and events like fall foliage and maple sugaring, which will also negatively impact tourist dollars.

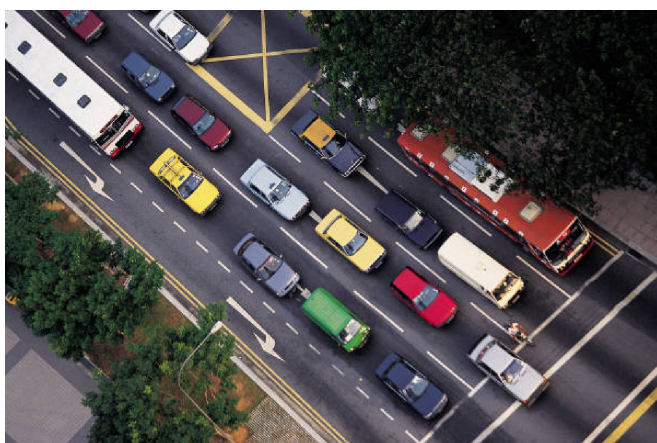
Look inside this issue for simple things you and your facility can do to reduce the amount of carbon dioxide your facility emits.

*Information for this article was taken from:*

- <http://yosemite.epa.gov/oar/globalwarming.nsf/content/index.html>
- [www.eos.sr.unh.edu](http://www.eos.sr.unh.edu)
- [www.cleanair-coolplanet.org](http://www.cleanair-coolplanet.org)

# How Does New Hampshire Contribute to Climate Change Pollution?

In New Hampshire, energy use is the primary source of greenhouse gas emissions accounting for 93 percent of total emissions in 1993. Included in energy use is the burning of oil, natural gas, diesel and gasoline for heating and transportation. In the same year, a



study showed that carbon dioxide was the principal greenhouse gas emitted in the state.

New Hampshire's transportation subsector represents the greatest proportion of fos-

sil fuel energy production and use. And since 1990, transportation shows the greatest growth of all other energy uses. In 1999, it accounted for 42 percent of the total emissions. Power generation accounted for 26 percent and commercial/industrial and residential both accounted for 16 percent of the emissions.

Sources: "New Hampshire 1993 Greenhouse Gas Inventory" report and US Department of Energy, Energy Information Administration.

## Transportation Fast Facts

- Burning one gallon of gasoline sends 20 pounds of carbon dioxide into the atmosphere.
- In 1999 the average vehicle got 24 miles per gallon.
- There are about 41 million miles driven everyday in New Hampshire.
- New Hampshire registers approximately 1.4 million vehicles per year.
- There were 1.3 million people living in New Hampshire in 2003.



## Sponsor a P2 Intern!

**W**ould you like to reduce your facility's regulatory burden, find cutting-edge solutions for eliminating waste, and reduce the amount of carbon dioxide emissions your facility produces? If you answered "yes" to one or more of the above, we have the solution for you.

Support a P2 Intern this summer and let them find a pollution solution for you! Over the last ten summers, 50 New Hampshire companies have worked with 95 University of New Hampshire chemical engineering students on pollution prevention projects with one common goal: **To reduce or eliminate waste and save money!** Most companies have realized significant savings as a result of utilizing the internship program. To date, companies have reported combined cost savings of **over \$3 million!**

### P2 Intern Program Helpful Links

- To find out more about the P2 Intern program, visit [www.des.nh.gov/nhppp/nh01006.htm](http://www.des.nh.gov/nhppp/nh01006.htm).
- To support an intern, visit [www.unh.edu/p2/nhppp/sponsor.html](http://www.unh.edu/p2/nhppp/sponsor.html).
- To view last year's New Hampshire Pollution Prevention Program intern profiles, visit [www.des.nh.gov/nhppp/fall2004.pdf](http://www.des.nh.gov/nhppp/fall2004.pdf).

## Want to Learn More? Link Up Here!

### [www.des.state.nh.us/ard/climatechange/ghgr.htm](http://www.des.state.nh.us/ard/climatechange/ghgr.htm)

This is the Department of Environmental Services' voluntary greenhouse gas reporting web site. This web site allows New Hampshire businesses to register and track their reductions in greenhouse gas emissions. Businesses can register greenhouse gas emission reductions at three different levels: company, facility or project level. There are three downloadable forms for reporting available on the website.

### [www.Newdream.org](http://www.Newdream.org)

This site does a wonderful job at targeting three main areas: live consciously, buy wisely and make a difference. At their website you can: write a letter to an auto manufacturer letting them know you support hybrid and alternative fuel vehicles, sign up for their *In Balance* newsletter, and check out their campaigns and programs. There are resources, straight green talk and links for kids and teens.

### [www.green-e.org](http://www.green-e.org)

This is a certification program for renewable electricity providers. The certification process involves the verification that renewable electricity providers are buying enough renewable energy to support their customer base. The New England states have the very powerful option of purchasing green power. Their website lists certified green energy producers that offer service in New England. Check out the benefits to purchasing green power, and which businesses have made the switch.

### [www.3phases.com](http://www.3phases.com)

Three Phases is just one of the companies that offers renewable energy options for state businesses, government, universities and utilities. The website calculates your business' cost to switch to green, renewable energy. In general, it costs between 10 percent and 20 percent more than your business' current utility bill to buy 100 percent renewable energy. There are other options, such as buying 25 percent, 50 percent, or 75 percent of your utility use in green power, making it more cost effective for businesses to make the switch. Best of all, there are no equipment updates needed for your business to use this type of power!

### [www.cleanair-coolplanet.org](http://www.cleanair-coolplanet.org)

This site contains basic information about the global warming issue. There is also an interesting section called "Case Studies: For Businesses" that displays what some businesses have done to offset their contribution to global warming. Sign up for their newsletter, and be sure to request an emailed version!

*The Department of Environmental Services does not endorse these web sites nor their products or services. These links are provided as pollution prevention resources only.*

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## What Impact Does Conventional Electricity Generation Have On the Environment?

Electricity generation is one of the primary contributors to air pollution and global climate change. It causes more air pollution than any other industry. US power plants produce:

- Two-thirds of the pollutants that result in acid rain.
- Half of our nuclear waste.
- One-third of our global warming pollution.

**"Conventional electricity generation is the nation's single largest industrial source of air pollution."**

*Kurt Johnson, EPA Green Power Partnership*

- One-third of the air pollutants that are a chief cause of

respiratory-related hospital admissions for children and senior citizens.

The average American's lifestyle results in the generation of 14,900 pounds of carbon dioxide *annually*, according to the EPA.

*Source: 3 Phases Energy Services website, Frequently Asked Questions page.*



# Businesses and Municipalities Rely On Biodiesel

## What is Biodiesel?

Biodiesel is a renewable, non-toxic biodegradable replacement for petroleum diesel. It can be made from plant and animal sources, from soy oil or grease, and its combustion results in reduced greenhouse gas emissions. It is usually mixed with diesel to yield a cleaner burning fuel that can be used without changing the composition of a diesel engine. Biodiesel has a higher lubricating quality than old-fashioned diesel, improving operation cleanliness and resulting in less engine wear.

Read below to find out how one New Hampshire business and one municipality are using biodiesel to reduce their greenhouse gas emissions.

## City of Keene

From one-ton trucks to freightliners, all 77 of the vehicles in the city's public works department run on B20 (20 percent biodiesel, 80 percent petroleum diesel). The change was prompted by a \$2,500 grant from the New Hampshire Governor's Office of Energy and Community Services to promote the use of alternative fuels. Changing to biodiesel saved the City of Keene 50,000 gallons of fuel in 18 months and eliminates 417 tons of carbon dioxide per year from being produced.

Public Works Fleet Services Superintendent Stephen Russell says the air quality inside the fleet maintenance facility has improved with the use of biodiesel. "When we used diesel, the fumes would linger," he says. "With biodiesel, we have no more headaches." This

simple switch improved working conditions without having to spend money on air cleaning systems.

## Cranmore Mountain Resort, North Conway

Cranmore Mountain announced in February 2004 that it was switching to biodiesel, an environmentally friendly fuel, to power all of its snow grooming machines. The Cranmore Mountain biodiesel project is a collaboration between Cranmore, DES, and the Granite State Clean Cities Coalition, a public/private partnership of 50 stakeholders statewide dedicated to increasing the use of alternative fuels in New Hampshire.

"Cranmore is passionate about taking measures to help the environment," said Ted Austin, General Manager for Cranmore Mountain Resort. "We are proud to be the first resort on the east coast to use this alternative fuel. We hope other resorts across the nation will fol-



Congressman Jeb Bradley, DES Assistant Commissioner Mike Walls, and Cranmore General Manager Ted Austin standing in front of the snowcats fueled by biodiesel during a press event held last year.

low in our footsteps. Biodiesel is not only a cleaner fuel, providing a healthier atmosphere for our guests and employees, but also, it increases the efficiency of our grooming machines resulting in better conditions for our winter devotees."

Articles taken from [www.eere.energy.gov/cleancities/ccn/8\\_3\\_success\\_keene.html](http://www.eere.energy.gov/cleancities/ccn/8_3_success_keene.html), [www.des.state.nh.us/nhppp/2004keene.htm](http://www.des.state.nh.us/nhppp/2004keene.htm), and from [www.des.nh.gov/ard/cranmore/Feb2704Press.pdf](http://www.des.nh.gov/ard/cranmore/Feb2704Press.pdf).

## Global Warming Impacts on New Hampshire's Coast



A sea level rise of 12 to 20 inches would cause large scale alteration of Great Bay, reduction of coastal estuaries and flooding of rivers, as well as potentially large revenue losses from coastal tourism – a \$484 million generator for New Hampshire. There would be huge infrastructure investments to erect dikes and dredge channels to "stem the tide."



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## Dates to Remember

**April 19-21, 2005**

**Safety and Health Council of Northern  
New England Annual Conference**

Center of New Hampshire  
Manchester, NH  
[lymanc@shcnne.org](mailto:lymanc@shcnne.org)  
[www.shcnne.org/conference.html](http://www.shcnne.org/conference.html)

**May 25, 2005**

**Pollution Prevention Hazardous Waste  
Coordinator Training**

College of Lifelong Learning  
Union Street  
Littleton, NH  
[sfrancesco@des.state.nh.us](mailto:sfrancesco@des.state.nh.us)  
[www.des.nh.gov/hwcs/hwccert/](http://www.des.nh.gov/hwcs/hwccert/)



### Global Warming Impacts on New Hampshire Fishing

Global warming will mean a loss of cold water fishing in New Hampshire; 50 percent to 100 percent eradication of rainbow, brook, and brown trout fishing, a \$150 million dollar New Hampshire industry. Read more on global warming inside.

